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10/561,610	02/01/2007	Hiroaki Nagano	SON-3026/SOH	6525

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EXAMINER

HSIEH, PING Y

ART UNIT	PAPER NUMBER
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2618

MAIL DATE	DELIVERY MODE
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12/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/561,610

Applicant(s)

NAGANO ET AL.

Examiner

Ping Y. Hsieh

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-18 is/are rejected.
- 7) ☐ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/20/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the abstract should be in a single paragraph of 150 words or less and not exceed 15 lines of text. Correction is required. See MPEP § 608.01(b).
2. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1 – 3, 7, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Fig. 1) in view of Yrjölä et al. (U.S. PATENT NO. 5,521,561).

-Regarding claim 1, applicant's admitted prior art (Fig. 1) discloses a wireless signal switching circuit for switching a plurality of transmitter and receiver signals having different frequencies in wireless communication for communication by at least a first communication system and a second communication system **(as disclosed in Fig. 1)**, comprising: an antenna terminal **(antenna terminal 101, Fig. 1)** connected to an antenna **(ANT, Fig. 1)**; a first signal route switching means having a plurality of switch means **(switches 104 and 105, Fig. 1)** for selecting a plurality of transmitter and receiver signals having different frequencies **(the switch 104 separates the transmitter signal F2 or F3TX of the frequency F2 or F3, and the receiver signal F2RX of the frequency F2 and the receiver signal F3RX of the frequency F3, Fig. 1)** in the first communication system; and a second signal route switching means **(diplexer 102 and switch 103, Fig. 1)** having a diplexer **(diplexer 102, Fig. 1)** for separating the transmitter and receiver signals having a further different frequency of the first communication system lower than the plurality of frequencies in the first communication system explained above and the transmitter and receiver signals of the second communication system **(switch 103 separates a transmitter signal F1TX and a receiver signal F1RX of the frequency F1, Fig. 1)**, a first filter side terminal of the diplexer being supplied with transmitter and receiver signals having a further different frequency of the first communication system, and a second filter side terminal of the diplexer being supplied with transmitter and receiver signals of the second communication

system (**diplexer 102 divides the frequency domain into a frequency F1 having a low frequency and frequencies F2 and F3 having a high frequency as disclosed in Fig. 1**). However, applicant's admitted prior art fails to disclose a phase rotating means having one end connected to the antenna terminal and imparting a phase rotation of 90 degrees to the phase of the signal of the frequency component supplied to the first signal route switching means; and a common input and output terminal of the diplexer being connected to the other end of the phase rotating means.

Yrjölä et al. discloses a phase rotating means (**phase shift PS as disclosed in Fig. 6**).

Therefore it would have been obvious to one of ordinary skills in the art at the time of invention to connect one end of the phase shift to the antenna terminal and imparting a phase rotation of 90 degrees to the phase of the signal of the frequency component supplied to the first signal route switching means; and connect the other end of the phase shift to a common input and output terminal of the diplexer. One is motivated as such in order to provide coupling between the resonators of a stop band filter implemented with transmission line resonator for filtering the harmonics generated by the transmitter.

-Regarding claim 2, the combination further discloses the phase rotating means has a characteristic of attenuating harmonic components of signals transmitted by the second communication system (**Yrjölä et al., col. 6 lines 18-28**).

-Regarding claim 3, the combination further discloses the first filter side of the diplexer is a low frequency filter side, and the second filter side of the diplexer is a high frequency filter side (**applicant's admitted prior art (Fig. 1), diplexer 102 divides the frequency domain into a frequency F1 having a low frequency and frequencies F2 and F3 having a high frequency**).

-Regarding claim 7, the combination further discloses the second signal route switching means (**diplexer 102 and switch 103 as disclosed in applicant's admitted prior art, Fig. 1**) has a switch means (**switch 103 as disclosed in applicant's admitted prior art, Fig. 1**) connected to the first filter side terminal of the diplexer (**diplexer 102 divides the frequency domain into a frequency F1 having a low frequency and frequencies F2 and F3 having a high frequency as disclosed in applicant's admitted prior art, Fig. 1**) and selecting a transmitter signal having a further different frequency of the first communication system and a switch means for selecting a receiver signal having a further different frequency of the first communication system (**switch 103 separates a transmitter signal F1TX and a receiver signal F1RX of the frequency F1, Fig. 1**).

-Regarding claims 8 and 15, the combination further discloses a wireless transmitter and receiver antenna (**ANT as disclosed in applicant's admitted prior art, Fig. 1**) and a wireless signal switching circuit (**switches 103, 104 and 105 as disclosed in applicant's admitted prior art, Fig. 1**).

6. Claims 5, 6, 9 - 14, 16 - 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Fig. 1) in view of Yrjölä et al. (U.S. PATENT NO. 5,521,561) and further in view of Atkinson et al. (U.S. PATENT NO. 7,058,364).

-Regarding claims 5, 9, 16 - 18, the combination of applicant's admitted prior art and Yrjölä et al. discloses all the limitation as claimed in claims 1-3 and 8. However, the combination fails to disclose the first communication system is a triple band GSM system, and the second communication system is a UMTS system.

Atkinson et al. disclose a transceiver for operating in the GSM 850 and GSM 900 bands, and in the GSM 1800 and 1900 bands and in the UMTS band between 1.92 and 1.98 GHz as disclosed in col. 1 lines 34 - 42.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the first communication system as disclosed by the applicant's admitted prior art and Yrjölä et al. to be operated in the GSM system and the second communication system as disclosed by the applicant's admitted prior art and Yrjölä et al. to be operated in the UMTS system. One is motivated as such in order to meet the emerging number of standards for wireless communications.

-Regarding claim 6, the combination further discloses the first signal route switching means (**as disclosed in applicant's admitted prior art, Fig. 1**), comprises: a first receiver signal switching circuit connected to the antenna

terminal and having a plurality of switch means (**applicant's admitted prior art, Fig. 1, switches 104 and 105**) for selecting receiver signals having a plurality of different frequencies in the first communication system (**applicant's admitted prior art, Fig. 1, the switch 105 separates the receiver signal F2RX of the frequency F2 and the receiver signal F3RX of the frequency F3**) and a first transmitter signal switching circuit connected to the antenna terminal (**as disclosed in applicant's admitted prior art, Fig. 1**) and having a switch means (**applicant's admitted prior art, Fig. 1, switch 104**) for selecting transmitter signals having a plurality of different frequencies in the first communication system (**applicant's admitted prior art, Fig. 1, switch 104 separates the transmitter signal F2 or F3TX of the frequency F2 or F3**) and a filter means connected to the switch means (**LPF 107 as disclosed in applicant's admitted prior art, Fig. 1**).

-Regarding claim 10, the combination further discloses the second filter side terminal of the diplexer is connected to a front end of a UMTS use transmission and reception circuit (**as disclosed in Atkinson et al., Fig. 6**), and the front end has: a duplexer for switching the WBCDMA transmitter signal and WBCDMA receiver signal (**duplex filter as disclosed in Atkinson et al., Fig. 6**), a low noise amplifier circuit for amplifying the WBCDMA receiver signal input through this duplexer (**low noise amplifier for the WBCDMA RX_IN as disclosed in Atkinson et al., Fig. 6**), and a power amplifier circuit for amplifying the WBCDMA transmitter signal (**amplifier for WCDMA Tx as disclosed in**

Atkinson et al., Fig. 6). Even though Atkinson et al. do not teach the WBCDMA is UMTS, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the WBCDMA system as disclosed in Fig. 6 to be UMTS system. One is motivated as such in order to meet the emerging number of standards for wireless communications.

-Regarding claims 11 and 12, the combination further discloses the second signal route switching means **(diplexer 102 and switch 103 as disclosed in applicant's admitted prior art, Fig. 1)** has a switch means **(switch 103 as disclosed in applicant's admitted prior art, Fig. 1)** connected to the first filter side terminal of the diplexer **(diplexer 102 divides the frequency domain into a frequency F1 having a low frequency and frequencies F2 and F3 having a high frequency as disclosed in applicant's admitted prior art, Fig. 1)** and selecting a transmitter signal having a further different frequency of the first communication system and a switch means for selecting a receiver signal having a further different frequency of the first communication system **(switch 103 separates a transmitter signal F1TX and a receiver signal F1RX of the frequency F1, Fig. 1).**

-Regarding claims 13 and 14, the combination further discloses a wireless transmitter and receiver antenna **(ANT as disclosed in applicant's admitted prior art, Fig. 1)** and a wireless signal switching circuit **(switches 103, 104 and 105 as disclosed in applicant's admitted prior art, Fig. 1).**

Allowable Subject Matter

7. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamada et al. (U.S. PG-PUB NO. 2003/0189910).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Y. Hsieh whose telephone number is 571-270-3011. The examiner can normally be reached on Monday-Thursday (alternate Fridays) 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lana Le can be reached on 571-272-7891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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PH



12-09-07

LANA LE
PRIMARY EXAMINER